

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

08 OCT 2004

Applicant's or agent's file reference 91.R0063WO2	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IT 03/00175	International filing date (day/month/year) 24.03.2003	Priority date (day/month/year) 10.04.2002
International Patent Classification (IPC) or both national classification and IPC B08B9/34		
Applicant R. BARDI S.R.L.		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 4 sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of 6 sheets.
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 09.10.2003	Date of completion of this report 17.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Plontz, N Telephone No. +31 70 340-3930 

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IT 03/00175**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

4, 5 as originally filed
1-3 received on 02.08.2004 with letter of 29.07.2004

Claims, Numbers

1, 2 received on 02.08.2004 with letter of 29.07.2004

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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International application No. PCT/IT 03/00175

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1,2
	No: Claims	
Inventive step (IS)	Yes: Claims	1,2
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1,2
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following document:

D1: DE 43 30 335 A (KRONSEDER MASCHF KRONES) 9 March 1995

2. **Process claims 1,2**

Document D1, as closest state of the art in respect of claim 1 discloses an process **suitable for** (cf. PCT Guidelines C-III 4.8) washing the interior of containers (6) made of plastic material with a capacity ranging between 5 and 30 litres and provided with a handle to facilitate their handling, of the type comprising the following phases:

gripping the container (6) in upside down condition,
spraying suitable cleaning liquid (4,5) inside the container through movable nozzles (2,3) producing at least a pair of rotating jets of cleaning fluid which simultaneously penetrate inside the container (6) through the mouth to clean the interior of the container.

The subject-matter of claim 5 differs from this known process in that the container rotates about its own longitudinal axis during the spraying phases and the jets of cleaning fluid are parallel and clean the interior of the container and of the handle

The subject-matter of claim 5 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as improving the cleaning of the handle (see page 1, lines 20-22 of the description)

The solution to this problem proposed in claim 5 of the present application is not suggested nor rendered obvious by the cited prior art and is therefore considered as involving an inventive step (Article 33(3) PCT).

Claim 6 is dependent on claim 5 and as such also meets the requirements of the PCT with respect to novelty and inventive step.

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A PROCESS
AN APPARATUS FOR WASHING THE INTERIOR OF CONTAINERS MADE OF
PLASTIC MATERIAL

EPO - DG 1

02.08.2004

TECHNICAL FIELD AND BACKGROUND ART.

(79)

5 The present invention relates to ^{a process} ~~an apparatus~~ for washing the interior of containers made of plastic material.

10 In particular the present invention pertains to the sector of linear washer machines used for instance for cleaning reusable containers such as large sized tanks, i.e. large bottles, containing about 11, 19 or 23 litres (i.e. 3, 5, 6 gallons), generally applied on water dispensing apparatuses.

15 The Italian patent application for industrial invention no. PR2000A000006 in the name of the same Applicant discloses a machine for washing containers comprising a base structure, means for housing the containers positioned with their mouth oriented downwards, a plurality of brushes mounted able to rotate on the base structure to clean the outer surface of the containers. In this machine the means for housing the containers

20 comprise gripping organs able to move between an open position and a closed position and provided with sliding elements, interposed between the gripping organs and the neck of the container and constituted by idle rollers, to allow the rotation of the container by means of the rotating action of the brushes.

Cleaning the interior of the container is particularly difficult, especially if the container is provided with a grip handle, which must be cleaned internally together with the container.

25 In PR2000A000006, the base structure of the washer machine has a plurality of nozzles which generate a jet able to move according to an arching trajectory, which penetrates inside the containers to wash the internal surfaces and which partially cleans the external

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surface in proximity to the neck. However, although numerous nozzles are present, each container is cleaned by means of a single jet of cleaning fluid emitted by a single nozzle. This is also confirmed by the description of the aforesaid document which repeatedly states "...the internal washing operation takes place when the mouth of the container lies above a nozzle" and "...the nozzle follows the container."

According to some possible embodiments, the nozzles can be fixed or movable relative to the base structure.

In the first case, the motion of the containers along the base structure is intermitted and the interior is washed when the mouth of the containers lies above a nozzle.

In the second case, the motion of the containers and the washing of their interior is continuous because the nozzle follows the container.

The presence of a single nozzle, fixed or movable, is not always sufficient for an adequate cleaning of the interior of the container, above all if the handle is present.

In a spraying device for bottle cleaning machines DE-A-4330335 discloses at least two spraying jets simultaneously directed by a nozzle arrangement into a bottle, which jets converge over their entire surfaces inside the bottle to form an acute angle and as a result are deflected and scattered. This causes the entire interior of the bottle to be sprayed and sprinkled which results in intensive cleaning even in the case of bottles with surfaces which are particularly water-repellent, for example polythene bottles.

However the above constitutes also the main drawback of the apparatus because when the two jets intersect each other inside the bottle they cause a nebulization of the liquid with a loss of cleaning power with respect to two parallel jets.

Another drawback is the fact that the two jets are associated to two cleaning stations duplicating the components.

DISCLOSURE OF THE INVENTION.

The aim of the present invention is to eliminate the aforesaid drawbacks and to make available a simple and economical washing ^{process} apparatus, which can provide for an adequate internal washing of the container and possibly also of the related handle.

Said aims are fully achieved by the washing ^{process} apparatus of the present invention, which is characterised by the content of the claims set out below. ~~and in particular in that the spraying means comprise at least a pair of movable nozzles, so shaped as to produce at least a pair of oscillating jets of cleaning fluid that simultaneously penetrate inside the container through the mouth.~~

The spraying means preferably comprise a rigid conduit for feeding the cleaning liquid provided on its own surface with one or more series of nozzles; a star-shaped element keyed onto said conduit and provided with a plurality of idle rollers, in a number equal

~~to the number of nozzles of each series. Said star element is set in rotation by the actuation of the container in the washer machine.~~

BEST MODE FOR CARRYING OUT OF THE INVENTION.

This and other characteristics shall become more readily apparent from the following description of a preferred embodiment illustrated, purely by way of non limiting example, in the accompanying drawing tables, in which:

- Figures 1 through 3 show ~~the apparatus in~~ three successive operative steps of the washing process.

With reference to the figures, the number 1 designates a container or large bottle destined to be introduced in a washer machine, preferably of the linear type.

The container 1 is generally of the reusable type such as water tanks having a capacity ranging between 5 and 30 litres, used in dispensing devices and destined to undergo a cleaning operation both of their interior and of their exterior walls.

For the description of the washer machine and of the means for gripping and handling the container 1, reference is made to the content of the aforementioned patent application PR2000A000006, since substantially the same means are used, which for the sake of greater clarity are not shown in the figures (such as the gripping means, the brushes, the rollers and the support structure), where instead only the washer apparatus and the bare container are shown.

The reference number 2 indicates a fixed frame whereto is anchored, free to rotate on itself, a rigid conduit 3 for feeding a cleaning fluid.

The conduit 3 has on its lateral surface two series of four nozzles 4 each, arranged at 90° from each other on the circumference of the conduit.

To the conduit 3 is made integral a star-shaped element 5 provided with four idle rollers

6.

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CLAIMS

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1. An apparatus for washing the interior of containers (1) made of plastic material with a capacity ranging between 5 and 30 litres, ~~which may be provided with a handle (7) to facilitate their handling,~~ of the type comprising:

- 5 - means for gripping the container (1) in upside down condition, i.e. with a mouth (9) oriented downwards; ~~so shaped as to allow also a rotation of the container (1) about its own central longitudinal axis;~~
- spraying means (4) for spraying suitable cleaning liquid inside the container (1) ~~whilst said container (1) rotates about its own central longitudinal axis;~~
- 10 ~~characterised in that~~ the spraying means comprising at least a pair of movable nozzles (4), so shaped as to produce at least a pair of rotating jets of cleaning fluid which simultaneously penetrate inside the container (1) through the mouth (9) to clean the interior of the container (1), ~~and of the handle (7), if present~~
- 15 ~~characterised in that~~ the movable nozzles (4) are defined on a lateral surface of a single rotating conduit (3) in such a way as to produce parallel jets of cleaning fluid.

2. An apparatus for washing the interior of containers (1) made of plastic material with a capacity ranging between 5 and 30 litres and provided with a handle (7) to facilitate their handling, of the type comprising:

- 20 - means for gripping the container (1) in upside down condition, i.e. with a mouth (9) oriented downwards,
- spraying means (4) for spraying suitable cleaning liquid inside the container (1), the spraying means comprising at least a pair of movable nozzles (4), so shaped as to produce at least a pair of rotating jets of cleaning fluid which simultaneously
- 25 penetrate inside the container (1) through the mouth (9) to clean the interior of the

container (1),

characterised in that the movable nozzles (4) are defined on a lateral surface of a single rotating conduit (3) in such a way as to produce parallel jets of cleaning fluid which clean the interior of the container and of the handle (7).

5 ~~2.~~ 3. An apparatus as claimed in claim 1 or 2, wherein the spraying means comprise:

- a rigid conduit (3) for feeding the cleaning fluid provided on its own lateral surface of at least two series of **four** nozzles (4);

10 - a star-shaped element (5) made integral with said conduit (3) and provided with a ~~four plurality of~~ idle rollers (6), in a number equal to the number of nozzles (4) of each series, said star-shaped element (5) being set in rotation by the actuation of the container (1),

~~3. An apparatus as claimed in claim 2, wherein each series of nozzles (4) comprises four nozzles and the star-shaped element (5) comprises four idle rollers (6), in such a way that a washing cycle corresponds to a 90° rotation of the conduit (3).~~

~~4. An apparatus as claimed in claim 1, wherein the nozzles (4) are so shaped that in each initial or terminal phase of the rotary motion the two jets exiting the pair of nozzles internally clean the handle (7) of the container (1).~~

20 ~~5.~~ 4. A machine for washing containers, characterised in that it comprises at least ~~an apparatus as claimed in any of the previous claims.~~

1. ~~5.~~ A process for washing the interior of containers (1) made of plastic material with a capacity ranging between 5 and 30 litres and provided with a handle (7) to facilitate their handling, of the type comprising the following phase:

25 - gripping the container (1) in upside down condition, i.e. with a mouth (9) oriented

downwards,

- spraying suitable cleaning liquid inside the container (1) through movable nozzles (4) producing at least a pair of rotating jets of cleaning fluid which simultaneously penetrate inside the container (1) through the mouth (9) to clean the interior of the
5 container (1),

characterised in that the container (1) rotates about its own central longitudinal axis during the spraying phases and the jets of cleaning fluid are parallel and clean the interior of the container and of the handle (7).

2. ~~6.~~ A process as in claim ¹/~~3~~ wherein in each initial or terminal phase of the rotary
10 motion the jets of cleaning fluid internally clean the handle (7) of the container (1).

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